

— 24. *Scarabæus hortícola* appeared. — 25. *Ephéméra vulgata* appeared; elder tree flowered. — 29. *Viburnum Opulus* and *Ròsa canina* (wild) flowered. — 30. *Vicia sylvatica* (garden) flowered. — 31. *Myosòtis palústris* (wild), *Digitalis purpurea* (wild), and *Ròsa spinosissima* (wild) flowered; *Chrýsis ignita* appeared.

June 1. *Hippárchia Janíra** and *Hepialus humuli* appeared; *Ròsa Doniana* (wild) flowered. — 4. *Acacia* (*Robínia Pseud-Acacia*) flowered. — 5. *Orchis maculata* and *bifolia* flowered. — 8. Wheat in ear; *Ino státics* appeared. — 9. *Ròsa arvensis* (wild) flowered; *Pygæra bucéphala* appeared. — 10. *Phalæna* (*Pýralis*) *urticata* appeared. — 14. Glowworm shone. — 19. *Póntia cardamines* last seen. — 24. Cuckoo last heard. — 28. *Phalæna chærophyllata* appeared.

I am, Sir, yours, &c.
Allesley Rectory, Aug. 15. 1833. W. T. BREE.

ART. IV. *Notice of the Habits of a Cynipideous Insect, parasitic upon the Rose Louse (Aphis rosæ); with Descriptions of several other parasitic Hymenóptera.* By J. O. WESTWOOD, Esq. F.L.S. &c.

Sir,

THE family Cynipidæ, corresponding with the Linnæan genus Cynips, is remarkable for the singular powers which the insects composing it possess of distorting various vegetable substances, by raising tubercles and warts, of various sizes and forms; or, as they are termed, galls. These are the result of wounds made by the female fly in depositing her eggs in the plant; the internal substance of these protuberances being destined for the support of the future grubs. These galls, which are often of a surprising size when compared with that of the minute creatures which produce them, have attracted the attention of naturalists of every age, as well as of the merest observer of nature from early childhood. Indeed, it is (or, at least, was, in that part of the country where I received the early part of my education) one of the venturesome feats of our schoolboy days, to mount to the topmost branches of the oak, for the purpose of getting oak galls (or, as we termed them, oak apples) to stick in our caps on that joyous half-holiday,

“The twenty-ninth of May,
 Royal-oak Day.”

* The earliest appearance of this insect that ever came to my knowledge: for the most part, it is seldom seen before the middle or end of June: once only I have noticed it so early as the 7th, and once on the 9th.

How these galls are formed is a question not yet solved; although some ingenious, and some, even among the latest, very untenable theories have been proposed for its solution. Into this question, however, I do not here propose to enter.

In the modern systems of insects, we find this family, notwithstanding its habits of feeding, in the larva state, upon the vegetable matter contained in galls, introduced into a series of families, all of which are parasitic upon other insects in the larva state. This, at first sight, and with the knowledge only of facts hitherto recorded, appears very unwarrantable, in respect to the natural relations of these groups; and yet, when we examine the general structure of the gall flies (and more particularly the neururation [nerving] of the wings, articulation of the antennæ, and peduncled abdomen), it is very evident that, notwithstanding their diversity in habits, the gall flies are more nearly allied to these parasitic families than to any other hymenopterous insects: whilst the facts subsequently detailed establish the correctness of these views; and open an interesting field of enquiry into the natural relations of affinity and analogy of the aberrant hymenopterous groups; into which, as being too dry for more general readers, I also refrain from entering.

In the autumn of 1832, Mr. Stephens (*Entomologica Britannica cultorum magister*), mentioned to me, that having, during the preceding summer, placed a quantity of aphides, which appeared to be ichneumoned (to coin the term), in a pill-box, he found, on examining it some months afterwards, a quantity of small dead gall flies; the interior of the bodies of the aphides having been entirely consumed.

Being anxious to obtain farther particulars relative to so interesting a point of natural history, I carefully examined the rose lice for some time, in the early part of last summer (1833); and, on the 20th of June, I was rewarded by observing a small cynipideous insect, similar to Mr. Stephens's, in the act of depositing an egg in the body of an aphid, considerably larger than itself. So intently was it occupied, that I was enabled to cut off the sprig, to carry it into my study, and to examine the insect, when there, with a lens of a quarter of an inch focus. On its withdrawing its ovipositor from the body of the aphid, upon which it was at the time engaged in depositing an egg, it had not far to travel to find another nidus for the reception of another of the germs of its future progeny, since it took its station on the back of the aphid next to the one from which it had just dismounted. I observed that it invariably placed itself with its head looking towards the head of the aphid, even if it ascended in the contrary direction. When once mounted, it kept its station as firmly as the

most expert jockey could do, even upon the Tailor of Brentford's horse; since the unfortunate aphis, like that irritated animal, immediately commenced kicking and rearing, at least upon its *fore* legs; jerking the extremity of its body about in all directions, and attempting to dislodge its enemy with its antennæ and legs, but in vain: the little creature carefully avoiding the blows of these limbs, and throwing its own antennæ over its back close upon its wings. At length, as though resigned to its fate, the unfortunate aphis ceased the struggle; and the victorious parasite, like the victorious god of old,

- "Hunc Deus arcitenens, et nunquam talibus armis
Ante, nisi in damis, capreisque fugacibus usus;
Mille gravem telis, exhaustâ pene pharetra,
Perdidit effuso per vulnera nigra veneno." *

The ovipositor was introduced into the back of the aphis in a perpendicular direction; until the body of the Cynips touched that of the aphis; in which position it was retained about the space of a minute, and was then withdrawn. It then proceeded to another rose louse, pricking it in the like manner; and so on, until it had deposited all its eggs. I observed at least twenty or thirty aphides thus attacked whilst under my examination. A few aphides, however, seemed not to regard the parasite, nor to feel the wound; and I observed, that, although in general it only pricked an aphis once, in one instance the operation was repeated four or five times on different parts of the body of the same aphis. Previously to mounting upon an aphis, it applied the terminal joints of the antennæ to some part of the body of the latter, as the legs, antennæ, or generally the hinder part of the abdomen; thereby appearing to gain information whether it had been previously punctured or not.

The aphides seem aware of the presence of their enemy, since, although undisturbed by the motions of their neighbours, no sooner is one of them touched by the antennæ of the parasite, than it sets off kicking and creeping out of the way as fast as it can; the parasite often following, overtaking, and mounting upon it. When this is the case with the larger winged individuals, the Cynips, after a long and successful chase, is compelled to dismount; being unable, from the upright position of the wings, to reach the back of the insect with its ovipositor. I afterwards observed several of

* That is, at least entomologically, "the sting-bearing fly, belonging to a group hitherto supposed to be employed only in pricking oaks and willows" (the old poet was, doubtless, a botanist, and alluded to the *Salix caprea* of later writers), "transfixed, with its ovipositor, the body of the vanquished aphis; causing it, in the end, to die, by the deadly matter introduced into the wound."

the female parasites similarly employed; but have not yet traced the developement of the insects to the perfect state.

As it cannot be doubted that diversity of habits necessarily implies diversity of structure (the reverse of the proposition being equally tenable), I carefully examined this fly, which proves to be a nondescript; and, independent of the necessary variation in internal organisation, its antennæ, wings, &c., differ from those of the type of the genus *Cynips*: and hence, in conjunction with its habits, I form it into a distinct genus or subgenus, under the name of

ALLO'TRIA * *Westw.* Thorax ovatus; scutello elevato, basi transversè depresso; abdomen thorace minus, late ovatum; antennæ ♀ corpore longiores, filiformes, 13-articulatæ; alæ magnæ, cellula costali 1, basali

* *Allotria*, estranged; from its habits being at variance with those of the rest of the family. The following sketch of the family *Cynipidæ* may not be deemed useless:—

Abdomen	plus minusve obovatum. Antennæ	cylindrico-articulatæ. Alæ	Antennæ ♂ 15. ♀ 13. articulatæ. Alæ	magnæ, areola submarginali parva trigona distincta obsoleta	IbæLIA - 1.
Abdomen	plus minusve obovatum. Antennæ	cylindrico-articulatæ. Alæ	Antennæ ♂ 15. ♀ 13. articulatæ. Alæ	magnæ, areola submarginali parva trigona distincta obsoleta	CYNIPS - 2.
Abdomen	plus minusve obovatum. Antennæ	cylindrico-articulatæ. Alæ	Antennæ ♂ 15. ♀ 13. articulatæ. Alæ	magnæ, areola submarginali parva trigona distincta obsoleta	N. G. Steph - 3.
Abdomen	plus minusve obovatum. Antennæ	cylindrico-articulatæ. Alæ	Antennæ ♂ 15. ♀ 13. articulatæ. Alæ	magnæ, areola submarginali parva trigona distincta obsoleta	FIGITES - 4.
Abdomen	plus minusve obovatum. Antennæ	cylindrico-articulatæ. Alæ	Antennæ ♂ 15. ♀ 13. articulatæ. Alæ	magnæ, areola submarginali parva trigona distincta obsoleta	EUCOILA - 5.
Abdomen	plus minusve obovatum. Antennæ	cylindrico-articulatæ. Alæ	Antennæ ♂ 15. ♀ 13. articulatæ. Alæ	magnæ, areola submarginali parva trigona distincta obsoleta	KLEIDOTOMA - 6.
Abdomen	plus minusve obovatum. Antennæ	cylindrico-articulatæ. Alæ	Antennæ ♂ 15. ♀ 13. articulatæ. Alæ	magnæ, areola submarginali parva trigona distincta obsoleta	ANACHARIS - 7.
Abdomen	plus minusve obovatum. Antennæ	cylindrico-articulatæ. Alæ	Antennæ ♂ 15. ♀ 13. articulatæ. Alæ	magnæ, areola submarginali parva trigona distincta obsoleta	ALLO'TRIA - 8.

1. *Ibælia* (*Latr.*) *Ságaris* *Pz.*; 1 species, *Bánchez cultellator* *Fab.*—
2. *Cynips* *Lin.*; between thirty and forty British species. *Cynips quercus folii* *Lin.*, &c. The nerves enclosing the small submarginal cell are of equal thickness.—
3. *G. N. Steph. Cat.* *Cynips aptera* *Fab. Coquebert.*—
4. *Figites* *Latr.* Antennæ of the males long, filiform, and 14-jointed; of the females shorter, and gradually thickened to the tips; the scutellum large, with two basal excavations, and obtuse at the tip. Fig. scutellaris *Róssi, Latr.*, &c.—
5. *Eucoila* *Westw.* Antennæ of the males 15-jointed; scutellum with three excavations; the basal joint of the abdomen is very short, and clothed with white pile at the tip. Jurine has confounded this and the preceding under the name of *Figites*: several species, including *Eucoila crasinérva* *Westw.* *Nigra nitida*; antennis piceis; pedibus anoque castaneis; femoribus obscurioribus; nervis alarum crassissimis fuscis. Long. $1\frac{3}{4}$ —2 lin.; Ensham.—
6. *Kleidótoma* *Westw.* Scutellum at the base with a broad excavation; with the apex tubercular and 1-excavated: several species, including *Kl. psiloides* *Westw.* *Nigra nitida*; antennis fusco-nigris; pedibus castaneis; femoribus piceis; nervis tenuibus. Long. $\frac{3}{4}$ lin.; Ensham.—
7. *Anácharis* *Dalman.* Antennæ in the males 14-jointed; scutellum with two rudimental excavations. Divisible into two sections. A, Abdominal peduncle one third of the length of the abdomen. Sp. 1. *An. eucharoides* *Dalm.* ♂ ♀. B, Peduncle not more than one fifth of the length of the abdomen. Sp. 2. *An. rufipes* *Westw.* *Nigra*; antennis concoloribus; subtus in ♀ pallidioribus; pedibus testaceis; tarsis fuscis; alis pallidis; nervis fuscis. ♂ ♀. Long. $1\frac{1}{4}$ lin. Sp. 3. *An. fumipennis* *Westw.* *Nigra*; antennis piceis; alis fumeis; nervis nigris; pedibus fulvo-piceis; tarsis obscuris. Long. 1 lin.—
8. *Allótria* *Westw.*, described above. I do not know the *Cynips* *edagogaster* of Panzer, which Mr. Haliday has formed into the genus *Onychia*.

1 triangulari, marginali 1, hâc nervum brevem (cum nervo longitudinali connexum) postice emittenti.

Thorax ovate; scutel raised, transversely depressed at the base; abdomen smaller than the thorax, and broadly ovate; antennæ in the females rather longer than the body, filiform, and 13-jointed; wings large, having 1 costal, 1 triangular basal, and 1 marginal or radial cell; the last emitting, at its hinder part, a short straight nerve, which is united to a longitudinal nerve.

Spec. 1. Allotr. victrix *Westw.* Nigra, nitida; capite fulvo; antennis fuscis; basi pedibusque totis ochreo-testaceis.

Longitudo corporis lineæ $\frac{2}{3}$. Expansio alarum 2 lineas.

Black, shining; head fulvous; antennæ dark brown; the base and the entire legs being ochreous.

As heretofore, I conclude by describing a few other singular parasitic Chalcididae and Proctotrupidæ, first requesting the student to erase the name of Gastracanthus, which I have proposed in p. 121. (Latreille having employed it for a genus of spiders), and to substitute that of Hetróxys*, having the same signification; also to correct the characters of Cephalonómia, described in p. 420, which has 12- not 10-jointed antennæ in both sexes. The figure of these organs in the magnified representation of the insect is correct.

CERAPTERO'CERUS *Westw.*, Encýrtus affinis; differt præcipue, antennis maximis latis, planis (antennas Cerápteri referentibus); nervoque stigmaticali apice nervi costalis remoto.

Differs from Encýrtus in the very large, broad, and flattened antennæ, which somewhat resemble those of the coleopterous genus Cerápterus (whence the derivation of the generic name); and in the stigmal nerve being placed at some distance from the apex of the costal nerve.

Sp. 1. Cerápt. mirábilis *Westw.* Niger, vertice, thoracisque dorso aureo-viridibus; mesalis† vel alis anticis nigris, singulo maculis 8 (formâ variis) albis ornato; pedibus nigro ochreoque variis.

Long. corp. 1 lin. Expans. alar. 2 lin. Prope Londinum et Cantabrigiam.

Black, with the crown of the head and the back of the thorax golden green; the wings black; each having eight white spots of different form, legs varied with black and ochre. Near London and Cambridge.

DERO'STENUS ‡ *Westw.*, Closterócero affinis. Caput magnum; antennæ

* *Hêtron*, the abdomen, and *oxys*, acute.

† The designation of the limbs attached to the respective thoracic segments, by prefixing the terms *pro*, *meso*, or *meta* to the name of the organ intended to be designated, according to its attachment to the prothorax, mesothorax, or metathorax, is an improvement for which we are indebted to Mr. Haliday. Hence, the anterior wings, being attached to the mesothorax, must be termed the mesalæ, and not proalæ. Setting aside the barbarous nature of these compound Latin and Greek names (which may be remedied by employing the terms medithorax and post-thorax), an objection, however, exists against their general adoption; namely, that entomologists are not agreed as to the names to be given to the primary divisions of the thorax. See Kirby and Spence's *Introduction*, vol. iii. p. 531.

‡ *Derē*, the neck, and *stenos*, narrow.

9-articulata; in medio crassiores; articulis 3 ultimis clavam parvam subconicam formantibus; collare capite et thorace multo angustius; abdomen thorace minus, longe pedunculatum; spatuliforme, depressum; tarsi tetrameri.

Head large; antennæ 9-jointed, the 4th, 5th, and 6th joints the broadest, hairy, the three terminal joints forming a small attenuated mass; collar much narrower than the head and thorax; abdomen smaller than the thorax, with a long footstalk, depressed; tarsi 4-jointed.

Sp. 1. *Derost. gémmeus* West. Nitidus; capite thoraceque splendide igneo-cupreis, hoc postice æneo; abdomine æneo, macula magna baseos albidâ; antennis fuscis; pedibus subalbis; alis immaculatis.

Long. corp. 1 lin. Exp. alar. 1½ lin. Habitat prope Ensham, Ang. 1826, &c.

Head and thorax of a splendid fiery copper colour, the latter brassy at the extremity; abdomen æneous, with a large basal whitish spot; antennæ brown; legs whitish; wings unspotted.

MYRMECOMORPHUS * *Westw.*, ad *Gonatopides* pertinere videtur. Caput oblongo-rotundatum depressum antice tuberculatum; ocellis nullis; antennæ corporis longitudine, 10-articulata, cylindricæ, articulo primo capitis longitudine; thorax capite duplo longior; alarum rudimentis vix conspicuis; collari fere quadrato; abdomen magnum ovatum; pedes crassi; tarsi antici haud raptorii, postici longissimi; palpi max. 3-, labiales 2-articulati.

Head rounded-oblong, depressed, with a frontal tubercle; ocelli none; antennæ as long as the body, 10-jointed, cylindric, and filiform, the first joint as long as the head; maxillary palpi 3-, labial 2-jointed; thorax twice as long as the head; rudiments of wings scarcely visible; collar nearly square; abdomen much larger than the thorax, ovate; legs thick; the anterior tarsi not raptorial, the posterior long.

Spec. 1. *Myr. rufescens* Westw. Rufo-ferrugineus, obscurus, subpubescens; antennis pedibusque paulo pallidioribus.

Long. corp. 1½ lin. Dorking; G. R. Waterhouse, Esq.

Brick-coloured red, not shining, subpubescent; with the antennæ and legs paler.

GONATOPUS (*Ljungh*) *sepsoides* Westw. Niger, nitidus; facie, antenarumque basi flavidis; capite postice abdominisque macula basali fulvis; pedibus sordide ochreis, tibiis anticis concoloribus; femoribus anticis basi, intermediis lineâ inferâ, posticisque summo apice supra, piceis; tarsis apice fuscis (♀ aptera, thorace binodoso).

Long. corp. 1½ lin. Habitat apud Blackgang Chine, Insulæ Vectis.

Black, shining; face and base of antennæ yellow; hinder part of the head and basal spot of the abdomen fulvous; legs dirty ochre, anterior tibiæ being of the same colour; the base of the anterior thighs, a line on the under side of the intermediate thighs, and the upper side of the posterior at the tips, pitchy; tarsi brown at the tips. Isle of Wight, Aug.

Gonatopus (*Ljungh*) *oratorius* West. Rufo-testaceus; abdomine, oculis, verticeque nigris; antennis nigris basi flavidis; tarsis apice fuscis (♀ aptera thorace binodoso).

Long. corp. 1½ lin. Habitat prope Ripley, com. Surrej.

Palish red; the crown of the head, eyes, abdomen, and antennæ black; the latter yellow at the base; tarsi brown at the tips.

Gonatopus (*Ljungh*) *Ljunghii* Westw., cum *Gonatopo* *formicario* *Ljungh* (nec *Drymus* *formicarius* Latr.), ut a *Dalmano* descripto in

* *Myrmica*, a genus of ants, and *morphe*, form; from its ant-like form.

Analecta Entomologica, fere notis omnibus convenit, at tibiæ anticæ subtus lineâ nigrâ sunt notatæ. Long. corp. $1\frac{1}{4}$ lin. Habitat Wimbledon; Common. An species distinctâ?

Nearly resembles *Gonátopus formicarius*; but the anterior tibia have a dark line on the under side.

ANTE ON? (*Jurine*) *excisus Westw.* Niger, obscurus; capite antice (subtus antennâs) angulariter producto, postice valde emarginato; antennis nigris, articulo primo brevi; alis hyalinis, stigmate nigrescenti angusto; pedibus obscure testaceis; coxis totis femoribusque (nisi basi et apice) nigro-piceis; pedibus posticis obscurioribus, ♂.

Long. corp. $1\frac{1}{4}$ lin. Expans. alar. $2\frac{1}{4}$ lin. Habitat prope Cantabrigiam, Jul., 1833.

Black not shining; the lower part of the face angularly produced in front; the hinder part of the head deeply emarginate, the posterior angles acute; the antennæ black, with the basal joint scarcely longer than the second; wings hyaline, with a blackish very narrow stigma, the stigmal nerve running nearly to the tip of the wing; legs dirty testaceous; the entire coxæ and thighs (except at the base and tips) pitchy, black, the hinder legs the darkest.

I am, Sir, yours, &c. J. O. WESTWOOD.

The Grove, Hammersmith, Sept., 1833.

ART. V. *Illustrations in British Zoology.* By GEORGE JOHNSTON, M.D., Fellow of the Royal College of Surgeons of Edinburgh.

15. PLUMULARIA CATHARTICA. (fig. 61.)

A SPECIMEN of this feather coralline, so large and perfect as that selected for the present illustration, rarely occurs; but smaller specimens are not uncommon in Berwick Bay; and I have seen the same from the Frith of Forth, in the collection of my friend Dr. Coldstream of Leith. It has been hitherto confounded with the *Plumularia pinnata* or setacea of Lamarck, which have the same outward habit, and rival it in delicacy and beauty; but the minuter characters are so dissimilar, that no doubt can be entertained of the distinctness of these species from one another.

Dr. Fleming, in his *History of British Animals*, has reduced *Pl. pinnata* and setacea to one species; and I adopted this opinion in my catalogue of the zoophytes of North Durham, published in the *Transactions of the Natural History Society of Newcastle* [and noticed in this Magazine, Vol. V. p. 702.]. I am now satisfied that, in so doing, I was in error; and, with a view of correcting this error, but more especially of pointing out with greater precision the distinctions between the species under consideration, I will here subjoin their characters:—